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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,698	12/18/2001	Nicholas J. Heaton	20.2786	3240

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EXAMINER

VARGAS, DIXOMARA

ART UNIT PAPER NUMBER

2859

DATE MAILED: 06/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/029,698

Applicant(s)

HEATON ET AL.

Examiner

Dixomara Vargas

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figure 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 9-15, 17-23, 25-29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Coates et al. (US 5,696,448).

With respect to claims 1, 9 and 18, Coates discloses a method for determining a molecular property of each constituent in a mixture of hydrocarbons comprising (Abstract): deriving at least one dynamic parameter to each constituent in the mixture from NMR data measured on the mixture (Abstract) and calculating the molecular property for the each constituent in the mixture from the at least one dynamic parameter for each constituent (Column 14, lines 11-17).

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4. With respect to claims 2, 10 and 19, Coates discloses generating a model that includes a plurality of components for the constituents of the mixture and iteratively modifying the model components to optimize the model with respect to the NMR data (Column 3, lines 21-23).
5. With respect to claims 3, 11 and 20, Coates discloses the dynamic parameter comprises one selected from a longitudinal relaxation time, a transverse relaxation time, a ratio of longitudinal and transverse relaxation times and diffusion rate (Column 3, lines 24-38).
6. With respect to claims 4 and 12, Coates discloses the mixture of hydrocarbons is disposed in a geological formation (Column 3, lines 16-20).
7. With respect to claims 5, 13, 21 and 27, Coates discloses correlating the at least one dynamic parameter of the each constituent with effective viscosity of each constituent (Column 3, lines 16-20).
8. With respect to claims 6, 14, 22, 28 and 31, Coates discloses deriving empirical parameters from a suite of hydrocarbon samples (Column 3, lines 16-20).
9. With respect to claims 7, 15, 23 and 29, Coates discloses the suite of hydrocarbon samples comprises crude oils (Column 14, lines 11-17).
10. With respect to claims 17 and 25, Coates discloses using one tool selected from a wireline NMR tool, a logging while drilling NMR tool, and a modular formation dynamics tester or a laboratory NMR instrument (Figures 1-4).
11. With respect to claim 26, see rejection of claims 1 and 3 above in paragraphs 3 and 5.

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*Claim Rejections - 35 USC § 103*

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 8, 16, 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coates et al. in view of Tutunji et al. (US 6,337,568).

With respect to claims 8, 16, 24 and 30, Coates disclose the claimed invention as stated above in claims 1-7, 9-15, 17-23, 25-29 paragraphs 3-11 except for the step of using a neural network. However, Tutunji discloses the use of the neural network (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Tutunji's neural network with Coates NMR logging system for performing the method of determining the molecular property of the hydrocarbons for the purpose of further enhancing the resolution of a particular log measurement since it can be used to generate finer resolution data

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by the computer simulation that produces output based on available log measurements, human knowledge, and other factors.

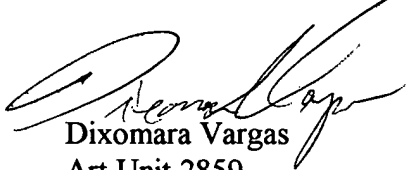
*Conclusion*


15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited in the PTO 892 discloses NMR methods of studying the geologic formation by measuring the relaxation times and calculating the viscosity of the crude oils hydrocarbon mixtures and the use of neural network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (703) 305-5705. The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.

  
Dixomara Vargas  
Art Unit 2859  
May 29, 2003

  
Diego Gutierrez  
Supervisory Patent Examiner  
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